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RECENT LITERATURE.

Watson and Lashley on Homing and Related Activities of Birds.¹

— In 1907, Dr. J. B. Watson made some investigations on the homing of Noddy and Sooty Terns at Bird Key, Tortugas, Florida, which were published as 'Publication 103' of the Carnegie Institution of Washington and formed probably the most noteworthy contribution to the subject of bird migration that has appeared in recent years. He demonstrated among other things that two incubating Sooty Terns taken from their nests on Bird Key and liberated off Cape Hatteras returned to their nests in five days covering a distance (by water) of approximately 1081 statute miles, most of it over areas where Sooty Terns do not normally occur and where these birds had had no previous experience.

The present publication describes the continuation of this investigation, carried on during 1910, 1912 and 1913. In order to meet a possible explanation of the Hatteras flight on the ground that the birds followed the coast line southward, experiments were made by liberating birds at Galveston and at various intermediate stations in the open waters of the Gulf of Mexico. From all of these trials birds returned safely to their nests. This disposed entirely of the coasting theory. A further suggestion has however been offered that the birds followed a well-marked water-current which sweeps across the gulf from Texas to Tortugas and which differs in color from the surrounding water. This is also disposed of by the fact that a number of the returning birds were liberated at night and passed through rain, haze and cloudy weather when the difference in the water would not be noticeable — if indeed it is at any time, from the position of the flying birds.

Therefore as Dr. Watson says the fact has now been established that *Noddy and Sooty Terns can return from distances up to 1000 miles in the absence of all landmarks*. This materially simplifies the problem of homing and what we now need is experimental work of a definite kind to determine the sensory mechanism by means of which the birds accomplish their return flights.

This present paper contains valuable preliminary contributions along these lines. Mr. Lashley gives an account of his studies of the nesting activities of the terns in which he proves that orientation in the neighborhood of the nesting place — *i. e.* return to nest, or young, or mate — is based largely upon visual habits, placing these activities in a different category from distant orientation.

¹ *Homing and Related Activities of Birds*. By J. B. Watson and K. S. Lashley. *The Acquisition of Skill in Archery*. By K. S. Lashley. Papers from the Department of Marine Biology of the Carnegie Institute of Washington. Alfred G. Mayer, Director. Volume VII. Publication No. 211. [Distributed July, 1915.] pp. 1-128.

Further proof against the ability of the birds' sight being sensitive to objects far distant is given in the mathematical fact that the curvature of the earth would necessitate a bird ascending nearly a mile in the air to reach rays from a lighthouse 150 feet high and 100 miles distant, granting the absence of haze which is almost always present.

It has moreover, been proven that vision in the chick is much less acute than in man and Dr. Watson shows that neither the chick nor the pigeon are sensitive to infra-luminous rays.

In the terns he also proves that there is no special tactual or olfactory mechanism in the nasal cavity which could aid homing. The facts presented are admittedly negative but Dr. Watson says, "the task of explaining distant orientation is an experimental one, which must yield positive results as soon as proper methods are at hand." While the difficulty of explaining it by current theories is admittedly great he does not suggest "the assumption of some new and mysterious sense."

He suggests work on the sensory equipment of homing pigeons saying that "it is just possible that these animals possess on certain parts of the body (eyelids, ear covering, oral cavity, etc.), sensitive tactual and thermal mechanisms which may assist them in reacting to slight differences in pressure, temperature, and humidity of air columns."

This contribution contains also a review of the various theories that have been advanced to explain homing, as well as a wealth of detailed investigation that cannot be dealt with here. Much reliable information with regard to homing pigeons and their flights gathered from practical fliers is likewise presented — data which have been in much demand. Ornithologists would do well to read the paper in its entirety as it is a good example of the methods of the student of behavior in eliminating complicating factors and avoiding the unwarranted conclusions into which the untrained investigator rushes blindly. While the 'mystery of mysteries' still remains unsolved, Dr. Watson has made great advances in showing us what factors are *not* involved in its explanation, and in disposing of a host of theories which tended only to obscure the problem, thus leaving it clearly defined for future investigators.— W. S.

Thorburn's 'British Birds.'¹ — It might be supposed that there was not room for another work on a subject that has received as much attention as the birds of Great Britain; but anyone who examines Mr. Thorburn's work, even casually, will we think concede that he has proved the error of this assumption.

With the wealth of data which is available any competent writer may

¹ British Birds | written and illustrated by | A. Thorburn, F. Z. S. | with eighty plates in colour, showing over | four hundred species | In four volumes | Vol. 1 | Longmans, Green and Co. | 39 Paternoster Row, London | Fourth Avenue & 30th Street, New York | Bombay, Calcutta, and Madras | 1915. Large 4°. pp. i-viii + 1-143, pls. 1-20. \$40 for the set of four volumes, or payable on delivery at \$10 each. No volumes sold separately.